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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Inventors: Joachim LOHR, et al.

Appln. No.: 10/583,736

Filed: June 20, 2006

For: SCHEDULING MODE DEPENDENT DATA TRANSMISSIONS

PETITION TO MAKE SPECIAL

Assistant Commissioner of Patents
Washington, DC 20231

Sir:

The Applicants respectfully petition that the above-captioned application be granted special status. The requirements of MPEP section 708.02(VIII) are complied with as follows:

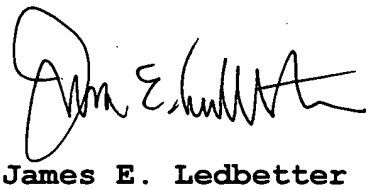
(1) The petition fee set forth in 37 CFR 1.17(i) is authorized to be charged to Deposit Account No. 19-4375.

(2) All pending claims (claims 42-65) of the present application are believed to be directed to a single invention; if the Office determines that all the claims presented are not obviously directed to a single invention, the Applicants agree to make an election without traverse as a prerequisite to the grant of special status.

anticipated by these references and would not have been obvious over any combination thereof.

Grant of special status in accordance with this petition is respectfully requested.

Respectfully submitted,



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(3) A pre-examination search has been made in the form of a search report in a counterpart PCT International Application (International Search Report relating to PCT/EP2005/006361 issued by the European Patent Office). Under MPEP 708.02, VIII, a search made by a foreign patent office satisfies the search requirement. An Information Disclosure Statement directed to the references cited in the ISR was filed on June 20, 2006.

Also, a pre-examination search has been made, and an Information Disclosure Statement directed thereto is attached. The field of search is:

Class 370, subclasses 328, 329, 352-356, 400, 401, 437, 474 and 486; and

Class 711, subclass 158.

Examiners Wellington Chin and John Pezzlo were consulted for the above field of search.

(4) One copy each of the prior art deemed most closely related to the subject matter encompassed by the claims is of record in the form of the art cited in the Information Disclosure Statement filed June 20, 2006, and the Information Disclosure Statement filed herewith.

(5) The following is a detailed discussion of the art of record, and comments pointing out how the instant claimed subject matter is patentably distinguishable thereover.

A. Discussion of All References of Record

D. Chase: "Code combining: A maximum-likelihood decoding approach for combining an arbitrary number of noisy packets", IEEE Transactions on Communications, Col. COM-33, pages 385 to 393, May 1985 discussed in the paragraph at application page lines 23-28 states that in chase-combining, retransmission packets carry identical symbols, and multiple received packets are combined either by a symbol-by-symbol or by a bit-by-bit basis and are stored in the soft buffers of respective HARQ processes.

3GPP TR 25.401, "UTRAN Overall Description" discussed at application page 3, line 29 *et seq.*, discloses the high level R99/4/5 architecture of Universal Mobile Telecommunication System (UMTS), as shown in application Fig. 1.

3GPP TR 25.896, "Feasibility Study for Enhanced Uplink for UTRA FDD (Release 6)" discussed at application page 4, line 20 *et seq.*, discusses uplink enhancements for Dedicated Transport Channels (DTCH).

3GPP TSG RAN WG1, meeting #31, Tdoc R01-030284, "Scheduled and Autonomous Mode Operation for the Enhanced Uplink" discussed at application page 5, line 16 *et seq.*, describes a new MAC sub-layer called MAC-e.

3GPP TSG RAN WG 1, meeting #31, "HARQ Structure", Tdoc R1-030247, is discussed at application page 6, second full paragraph. Every MAC-e entity corresponds to a user (UE), and application Fig. 6 depicts the base station (Node B) MAC-e architecture. Fig. 7 shows the S-RNC MAC-e architecture which comprises the reordering buffer of the corresponding user (UE). The number of reordering buffers is equal to the number of data flows in the corresponding MAC-e entity on the UE side. Data and control information is sent from all Node Bs within the active set to S-RNC during soft handover.

3GPP TR 25.896, "Feasibility study for Enhanced Uplink for UTRA FDD (Release 6)" is discussed at application page 9, first full paragraph. Due to Node B being unaware of the number of UEs transmitting at the same time, no precise control of the uplink noise rise in the cell may be possible.

3GPP TS 25.322, "Radio Access Network; Radio Link Control (RLC) protocol specification; (Release 6)," version 6.0.0, discussed at application page 11, second to last full paragraph, relates to the radio link control (RLC) protocol which is the layer 2 protocol used in 3G UMTS cellular systems for flow control and error recovery for both user and control data, with three operational modes for RLC in UMTS: transparent mode (TM), unacknowledged mode (UM) and acknowledged mode (AM). This

document states that each RLC entity is configured by RRC to operate in one of these modes.

3GPP TS 25.321, "Medium Access Control (MAC) Protocol Specification; (Release 6)", version 6.1.0, is discussed in the paragraph bridging application pages 15 and 16, and gives details of the UMTS TFC selection procedure.

US 2002/085531 discloses a wireless network with a selection process for finding a suitable transport format combination which then determines the transmission of transport blocks. A radio network controller or a terminal performs a selection of a number of transport format combinations in the order of priority of logic channels. Other factors for the selection are most packet data units and transmission time interval. The radio network controller or a terminal sorts the logic channels at the beginning of a transmission according to the priorities of the logic channels and, when there are logic channels having the same priority, according to the length of an underlying transmission time interval. The MAC layer is used for selecting the suitable transport format for each transport channel, taking into account the priorities of the logic channels between the RLC and the MAC layer. One or more logical channels are mapped onto a transport channel.

US 2002/122400 discloses allocating plural data streams from logical channels onto one data stream on a transport channel for transmission based on a list of allowable TFCs received from a network and the priority of the data streams. The reference states that the network may provide mapping of plural logical channels to a transport channel and plural transport channels to an L1 channel, or, from another perspective, mapping of an L1 channel to plural transport channels and a transport channel to plural logical channels. The network also indicates, for each TF, which logical channels mapped onto a transport channel are allowed to use the TF.

USPN 6,463,071 discloses a communications network operating in a data cable system with a priority data transmission scheme in fixed length protocol frames. High priority data may supplant low priority data which may be abandoned.

3GPP (3rd Generation Partnership Project), Technical Specification Group Radio Access Network; Radio Interface Protocol Architecture (3GPP TS 25.301 version 3.3.0)," is cited under Category A in the ISR. This document states that priority handling between data flows of one UE may be performed. When selecting between the Transport Format Combinations in the given Transport Format Combination Set, priorities of the data flows to be mapped onto the corresponding Transport Channels can be taken

into account. Priorities are e.g. given by attributes of Radio Bearer services and RLC buffer status. The priority handling is achieved by selecting a Transport Format Combination for which high priority data is mapped onto L1 with a "high bit rate" Transport Format, at the same time letting lower priority data be mapped with a "low bit rate" (could be zero bit rate) Transport Format. Transport format selection may also take into account transmit power indication from Layer 1. Priority handling between UEs may be by means of dynamic scheduling. In order to utilize the spectrum resources efficiently for bursty transfer, a dynamic scheduling function may be applied. MAC realizes priority handling on common and shared transport channels. For dedicated transport channels, the equivalent of the dynamic scheduling function is implicitly included as part of the reconfiguration function of the RRC sublayer. Section 5.3.1.1.2 discloses a scheme for mapping between logical channels and transport channels.

USPN 6,640,105 discloses a method for controlling radio access bearers in a mobile communication system, to achieve efficient management of establishment, sustenance, and cancellation of radio resource access according to traffic volumes of the RLC and MAC, which are sub-layers of the second layer. More particularly, the method involves (1) disposing a

radio resource control layer having radio access bearers in a user side of the communication system; (2) disposing a radio link control layer, a media access control layer, and a physical layer in the user side beneath the radio resource control layer in succession; (3) measuring a traffic volume of the media access control layer and radio link control layer in the user side by using the media access control layer in the user side to produce traffic volume measurements; (4) comparing the traffic volume measurements to at least one of an upper critical value and a lower critical value provided to the media access control layer in the user side from a radio resource control layer in a network side of the communication system through the radio resource control layer in the user side of the system, and forwarding a comparison result and the traffic volume measurements to the radio resource control layer in the network side through the radio resource control layer in the user side; and (5) controlling the radio access bearer in the user side through the radio resource control layer in the network side according to a result of the comparison.

USPN 6,701,151 discloses a fast method for mobile terminals to obtain needed radio bearer resources from a radio access network (RAN). The method establishes a signaling radio bearer (SRB) for control signaling between a mobile terminal and a radio

access network wherein the mobile terminal transmits an access request message to the RAN, with the access request message comprising a SRB resource request that identifies the type of SRB being requested. The mobile terminal receives an uplink assignment message from the RAN responsive to the SRB resource request, with the uplink assignment message allocating specified SRB resources to the mobile terminal. The mobile terminal transmits control signaling messages to the RAN using the specified SRB resources allocated to the mobile terminal in the uplink assignment message. Col. 6, lines 19-32 states that, in response to receiving the SRB resource request from mobile terminal 18, the GSM/EDGE RAN 12 assigns needed radio resources and logical resources to mobile terminal 18, and transmits the packet channel assignment information to mobile terminal 18. Once mobile terminal 18 receives the packet channel assignment information, it transmits RLC data block(s) to GERAN 12 on the assigned uplink packet channel. Once the necessary information is transmitted, GERAN 12 generally de-allocates the involved SRB resources.

USPN 6,792,278 discloses, in order to reduce signaling needed for the establishment of data connections, creating a paging database in a suitable network node, such as the radio network controller RNC of each radio access network. The paging

database collects data useful in connecting the called mobile station . For example, when a data connection has been established to a mobile station under a given subscriber identity, the mobile station informs the network in an agreed manner about all the subscriber identities in its use, e.g., during call set-up or later during the connection or using, e.g., a separate message independent of the possible connections. The network stores these identities in the paging database together with the mobile station location information and signaling connection data possibly associated with the data connection. If, during the connection, the mobile station moves into another cell, the data relating to the mobile station are updated in the paging database. If, during this connection or a subsequent connection, another subscriber identity of the same mobile station is paged at any node, the network checks the paging database and uses the data found therein to establish a signaling connection.

B. Discussion of How the Claimed Invention Patentably Distinguishes over the References of Record

It is submitted that the references cited above, considered either alone or in combination, fail to disclose or suggest the

subject matter of independent claims 42, 53 and 63, directed to a mobile communication system that performs data transmission by:

(1) establishing a radio bearer between a mobile terminal and a radio access network (RAN),

(2) receiving, from the RAN, information that (i) includes a priority assigned to a logical channel that is mapped on a transport channel and (ii) indicates a scheduling mode out of plural scheduling modes of the logical channel,

(3) mapping the radio bearer to the logical channel based on the information received from the RAN, and

(4) transmitting the data via the transport channel.

The Applicants submit that the above-noted combinations of features of the independent claims are not taught or suggested by the combined teachings of the art of record, and thus the independent claims, and all claims dependent therefrom, are patentable.

Various references of record relate to radio access bearers and mapping of logical channels onto a transport channel. For example, US 2002/085531 discloses that the MAC layer is used for selecting the suitable transport format for each transport channel, taking into account the priorities of the logic channels between the RLC and the MAC layer, and one or more logical channels are mapped onto a transport channel. US 2002/122400

discloses mapping of plural logical channels to a transport channel and plural transport channels to an L1 channel. Section 5.3.1.1.2 of 3GPP (3rd Generation Partnership Project), Technical Specification Group Radio Access Network; Radio Interface Protocol Architecture (3GPP TS 25.301 version 3.3.0), discloses a scheme for mapping between logical channels and transport channels. USPN 6,640,105 discloses controlling the radio access bearer in the user side through the radio resource control layer in the network side according to a comparison result of traffic volume measurements. USPN 6,701,151 discloses a fast method for mobile terminals to obtain needed radio bearer resources from a radio access network (RAN). However, the references of record, considered alone or together, fail to teach or suggest at least the above-noted claim features of receiving, from a RAN, information that includes a priority assigned to a logical channel that is mapped on a transport channel and indicates a scheduling mode out of plural scheduling modes of the logical channel, and mapping the radio bearer to the logical channel based on the information received from the RAN.

Accordingly, in light of the foregoing discussion pointing out how the claimed invention distinguishes over the cited references, the Applicants respectfully submit that the inventions of all the presently pending claims are not